इंटरनेट मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

"जानने का अधिकार, जीने का अधिकार"
Mazdoor Kisan Shakti Sangathan
"The Right to Information, The Right to Live"

"पुराने को छोड नये के तरफ"
Jawaharlal Nehru
"Step Out From the Old to the New"

IS 3268 (1981): Specification for Stockless Anchors (For Ships Use) [TED 17: Shipbuilding]

"ज्ञान से एक नये भारत का निर्माण"
Satyanarayan Gangaram Pitroda
"Invent a New India Using Knowledge"

Act Number 22 of 2005
The Indian Parliament
RIGHT TO INFORMATION

Made Available By
Public.Resource.Org

"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

BLANK PAGE

BRUTUM FULMEN

IGNORANTIA JURIS NON EXCUSAT

PROTECTED BY COPYRIGHT

IS : 3268 - 1981

(Reaffirmed 2002)

Indian Standard

SPECIFICATION FOR STOCKLESS ANCHORS (FOR SHIPS' USE)

(First Revision)

UDC 629·12·015·64

© *Copyright* 1981

INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Price Rs 5.00

December 1981

Indian Standard
SPECIFICATION FOR STOCKLESS ANCHORS (FOR SHIPS' USE)
(First Revision)

Shipbuilding Sectional Committee, MCPD 1

Chairman	*Representing*
Shri S. Parmanandhan	Ministry of Defence (NHQ)
Members	
Director of Naval Construction (*Alternate* to Shri S. Parmanandhan)	
Shri S. K. Bose	Garden Reach Shipbuilders & Engineers Ltd, Calcutta
Shri A. R. Choksi	The Indian National Shipowners Association, Bombay
Shri R. Roy Chowdhury	Calcutta Port Trust, Calcutta
Shri V. G. Damle	AFCO Ltd, Bombay; *and* Institute of Marine Technologists, Bombay
Shri A. Kapur (*Alternate*)	AFCO Ltd, Bombay
Capt P. S. Barve (*Alternate*) Shri A. T. Joseph (*Alternate*) Shri R. D. Paralkar (*Alternate*) Shri B. D. Wadia (*Alternate*)	Institute of Marine Technologists, Bombay
Hony Secretary	The Institute of Marine Engineers (Indian Division Council), Bombay
Shri A. T. Joseph (*Alternate*)	
Shri K. S. Mani (*Alternate*)	
Shri D. B. Irani	Directorate General of Shipping, Bombay
Shri J. S. Bhatti (*Alternate*)	
Shri Madan L. Kochhar	American Bureau of Shipping, Bombay
Shri P. K. Banerjee (*Alternate*)	
Shri T. S. Rajan	Ericson & Richards, Bombay
Shri C. M. Rao	Hindustan Shipyard Ltd, Vishakhapatnam
Shri S. Srinivasan (*Alternate*)	
Cdr N. Ravindranathan	Ministry of Defence (DGI)
Lt A. S. Oberoi (*Alternate*)	

(*Continued on page* 2)

© *Copyright* 1981
INDIAN STANDARDS INSTITUTION
This publication is protected under the *Indian Copyright Act* (XIV of 1957) and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act.

(*Continued from page* 1)

Members	*Representing*
Shri H. S. Rao	Indian Register of Shipping, Bombay
Shri S. Ratra	Lloyd's Register of Shipping, Bombay
Shri D. Madhok (*Alternate*)	
Shri K. Sankaranarayanan	Directorate General of Technical Development, New Delhi
Shri H. K. Sharma (*Alternate*)	
Shri B. R. Sawarkar	Cochin Shipyard Ltd, Cochin
Shri P. R. Govil (*Alternate*)	
Shri G. Sinha	SF India Ltd, Calcutta
Shri H. Svensson (*Alternate*)	
Capt V. Subramanian	The Shipping Corporation of India Ltd, Bombay
Shri S. Sundaram (*Alternate*)	
Shri T. N. Sujan	Larsen & Toubro Ltd, Bombay
Shri A. B. Thakur	Ministry of Shipping & Transport
Shri S. N. Suman (*Alternate*)	
Shri P. S. Das, Director (MCPD)	Director General, ISI (*Ex-officio Member*)

Secretary

Shri V. K. Sehgal
Deputy Director (MCPD), ISI

Indian Standard

SPECIFICATION FOR STOCKLESS ANCHORS (FOR SHIPS' USE)

(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 30 January 1981, after the draft finalized by the Shipbuilding Sectional Committee had been approved by the Marine, Cargo Movement and Packaging Division Council.

0.2 An anchor is designated by its nominal mass. The dimensions of the anchor and its component parts depend upon the nominal mass and the design features of the anchor.

0.3 This standard was first published in 1965. The need for the revision was felt regarding the range of nominal mass. The range of nominal mass has been revised from 50-9 200 kg to 60-15 000 kg.

0.4 In the formulation of this standard due weightage has been given to international co-ordination among the standards and practices prevailing in different countries in addition to relating it to the practices in this field in this country. This has been met by deriving assistance from the following publications:

JIS F 3301:1975 Anchors. Japanese Industrial Standards Committee.

UNE 7184:1956 Anclas sin cepo, Tipo B (Stockless anchor, Type B). Instituto Nacional de Racionalizacion del Trabajo.

0.5 This standard is one of a series of Indian Standards on anchors. Other standards in the series are:

IS : 3267-1981 General requirements for anchors (*first revision*)

IS : 3269-1981 Specification for stock anchors (*first revision*)

IS : 3270-1966 Specification for stock and single fluke stock anchors (for harbour use)

0.6 'General requirements for anchors' (IS : 3267-1981) is a necessary adjunct to this standard.

0.7 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard specifies the nominal mass ranging from 60 to 15 000 kg, and dimensions of various components of stockless anchors.

2. TERMINOLOGY

2.1 For the purpose of this standard definitions as given in IS : 3267-1981† shall apply.

3. DIMENSIONS AND MASS

3.1 As the anchor is designated by its nominal mass, the dimensions of anchor and its component parts depend upon the nominal mass and the design features of the anchor.

3.2 Dimensions and Mass of Stockless Anchor — The dimensions of stockless anchor are based on the basic dimensions $h=S=26{\cdot}374\ 3\sqrt{G}$, where G is the nominal mass in kg of the anchor.

3.2.1 The mass and dimensions of head and crown pin of stockless anchor shall be as given in Table 1. The shape of head and crown pin shall be as shown in Fig. 1.

3.2.2 The mass and dimensions of shank, anchor shackle and shackle pin shall be as given in Table 2. The shape of shank, anchor shackle and shackle pin shall be as shown in Fig. 2. The shank shall be shrunk on to the crown pin.

3.3 Tolerances on Dimensions — The dimensional tolerances on each component of anchor shall be ± 4 percent and its maximum value shall be limited to ± 20 mm.

3.4 Tolerances on Mass — The variation in the mass of different components shall be ± 5 percent of the mass of those components provided that the total mass of the anchor shall be not less than the nominal mass. In no case the mass of anchor head and crown pin together be less than two-thirds the mass of anchor.

---

*Rules for rounding off numerical values (*revised*).

†General requirements for anchors (*first revision*).

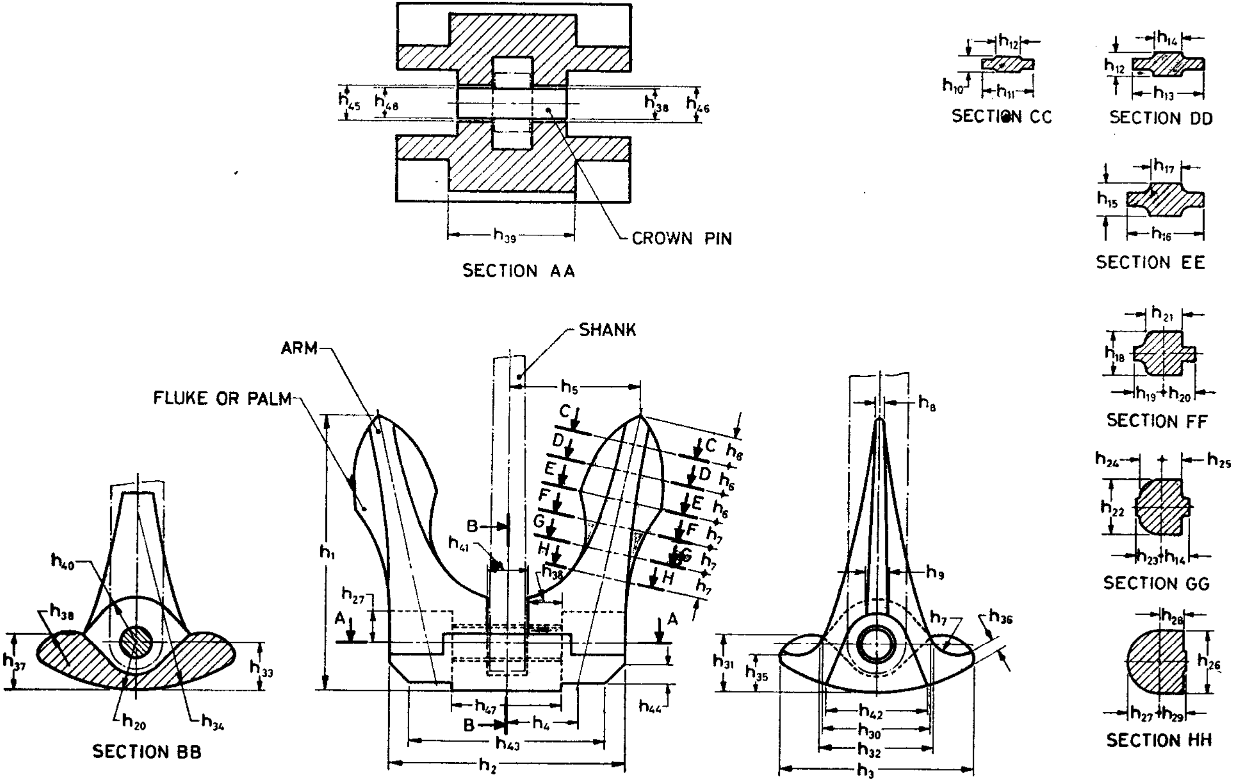

Fig. 1 Dimensions for Head and Crown Pin of Stockless Anchors

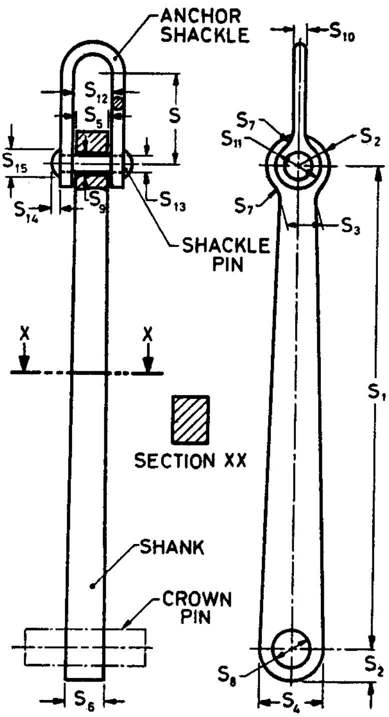

FIG. 2 DIMENSIONS FOR SHANK, ANCHOR SHACKLE AND SHACKLE PIN OF STOCKLESS ANCHORS

4. MATERIAL FOR CONSTRUCTION

4.1 The material for construction of the stockless anchor and its various parts shall be as specified in IS : 3267-1981*.

5. TESTS

5.1 Stockless anchors shall be tested according to the tests given in IS: 3267-1981*.

6. DESIGNATION

6.1 The stockless anchor shall be designated by its name, use (for ship or harbour), the nominal mass and number of this standard.

---

*General requirements for anchors (*first revision*).

Example:

A stockless anchor for ship having a nominal mass of 6 000 kg shall be designated as :

Stockless anchor (ship) × 6 000 kg IS : 3268

7. MARKING

7.1 The stockless anchors shall be marked as specified in IS : 3267-1981*.

7.1.1 The stockless anchors may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI Marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

---

*General requirements for anchors (*first revision*).

As in the Original Standard, this Page is Intentionally Left Blank

TABLE 1 MASS AND DIMENSIONS FOR HEAD AND CROWN PIN OF STOCKLESS ANCHORS

(*Clause* 3.2.1 *and Fig.* 1)

All dimensions in millimetres.

Nominal Mass, G kg	Head	Mass of Crown Pin kg	Base A = 26·374 ∛G	A1 (3·51A)	A2 (3·01A)	A3 (2·53A)	A4 (0·89A)	A5 (1·68A)	A6 (0·37A)	A7 (0·34A)	A8 (0·1A)	A9 (0·27A)	A10 (0·2A)	A11 (0·67A)	A12 (0·31A)	A13 (0·93A)	A14 (0·35A)
60	44	2	103	362	310	261	92	173	38	35	10	28	21	69	32	96	36
80	59	2	114	400	343	288	101	192	42	39	11	31	23	76	35	106	40
100	74	3	122	428	367	309	109	205	45	41	12	33	24	82	38	113	43
120	88	3	130	456	391	329	116	218	48	44	13	35	26	87	40	121	46
140	103	4	137	481	412	347	122	230	51	47	14	37	27	92	42	127	48
165	121	5	144	505	433	364	128	242	53	49	14	39	29	96	45	134	50
180	133	5	149	523	448	377	133	250	55	51	15	40	30	100	46	139	52
190	140	5	152	534	458	385	135	255	56	52	15	41	30	102	47	141	53
240	177	7	164	576	494	415	146	276	61	56	16	44	33	110	51	153	57
300	221	8	176	618	530	445	157	296	65	60	18	48	35	118	55	164	62
360	265	10	188	660	566	476	167	316	70	64	19	51	38	126	58	175	66
420	309	12	198	695	596	501	176	333	73	67	20	53	40	133	61	184	69
480	353	13	206	723	620	521	183	346	76	70	21	56	41	138	64	192	72
570	420	16	219	769	659	554	195	368	81	74	22	59	44	147	68	204	77
660	486	18	230	807	692	582	205	386	85	78	23	62	46	154	71	214	80
780	574	22	243	853	731	615	216	408	90	83	24	66	49	163	75	226	85
900	662	25	254	892	765	643	226	427	94	86	25	69	51	170	79	236	89
1 020	751	29	266	934	801	673	237	447	98	90	27	72	53	178	82	247	93
1 140	839	32	276	969	831	698	246	464	102	94	28	75	55	185	86	257	97
1 290	949	36	287	1 007	864	726	255	482	106	98	29	77	57	192	89	267	100
1 440	1 060	40	298	1 046	897	754	265	501	110	101	30	80	60	200	92	277	104
1 590	1 170	44	308	1 081	927	779	274	517	114	105	31	83	62	206	95	286	108
1 740	1 280	49	317	1 113	954	802	282	533	117	108	32	86	63	212	98	295	111
1 920	1 413	54	328	1 151	987	830	292	551	121	112	33	89	66	220	102	305	115
2 100	1 545	59	338	1 186	1 017	855	301	568	125	115	34	91	68	226	105	314	118
2 280	1 678	64	347	1 218	1 044	878	309	583	128	118	35	94	69	232	108	323	121
2 460	1 810	69	356	1 250	1 072	901	317	598	132	121	36	96	71	239	110	331	125
2 640	1 943	74	364	1 278	1 096	921	324	612	135	124	36	98	73	244	113	339	127
2 850	2 097	80	374	1 313	1 126	946	333	628	138	127	37	101	75	251	116	348	131
3 060	2 252	85	383	1 344	1 153	969	341	643	142	130	38	103	77	257	119	356	134
3 300	2 428	92	393	1 379	1 183	994	350	660	145	134	39	106	79	263	122	365	138
3 540	2 605	99	402	1 411	1 210	1 017	358	675	149	137	40	109	80	269	125	374	141
3 780	2 782	105	411	1 443	1 237	1 040	366	690	152	140	41	111	82	275	127	382	144
4 050	2 980	113	420	1 474	1 264	1 063	374	706	155	143	42	113	84	281	130	391	147
4 320	3 179	121	430	1 509	1 294	1 088	383	722	159	146	43	116	86	288	133	400	150
4 590	3 378	128	438	1 537	1 318	1 108	390	736	162	149	44	118	88	293	136	407	153
4 890	3 598	136	448	1 572	1 348	1 133	399	753	166	152	45	121	90	300	139	417	157
5 250	3 864	146	458	1 608	1 379	1 159	408	769	169	156	46	124	92	307	142	426	160
5 610	4 128	156	469	1 646	1 412	1 187	417	788	174	159	47	127	94	314	145	436	164
6 000	4 415	167	479	1 681	1 442	1 212	426	805	177	163	48	129	96	321	148	445	168
6 450	4 747	180	491	1 723	1 478	1 242	437	825	182	167	49	133	98	329	152	457	172
6 900	5 078	192	502	1 762	1 511	1 270	447	843	186	171	50	136	100	336	156	467	176
7 350	5 409	205	513	1 801	1 544	1 298	457	862	190	174	51	139	103	344	159	477	180
7 800	5 740	218	523	1 836	1 574	1 323	465	879	194	178	52	141	105	350	162	486	183
8 300	6 108	232	534	1 874	1 607	1 351	475	897	198	182	53	144	107	358	166	497	187
8 800	6 476	246	545	1 913	1 640	1 379	485	916	202	185	54	147	109	365	169	507	191
9 300	6 844	261	556	1 952	1 674	1 407	495	934	206	189	56	150	111	373	172	517	195
9 900	7 285	276	566	1 987	1 704	1 432	504	951	209	192	57	153	113	379	175	526	198
10 500	7 727	293	578	2 029	1 740	1 462	514	971	214	197	58	156	116	387	179	538	202
11 100	8 168	310	588	2 064	1 770	1 488	523	988	218	200	59	159	118	394	182	547	206
11 700	8 610	326	599	2 102	1 803	1 515	533	1 006	222	204	60	162	120	401	186	557	210
12 300	9 052	343	611	2 145	1 839	1 546	544	1 026	226	208	61	165	122	409	189	568	214
12 900	9 493	360	618	2 169	1 860	1 564	550	1 038	229	210	62	167	124	414	192	575	216
13 500	9 935	377	628	2 204	1 890	1 589	559	1 055	232	214	63	170	126	421	195	584	220
14 250	10 487	398	639	2 243	1 923	1 617	569	1 074	236	217	64	173	128	428	198	594	224
15 000	11 038	418	650	2 282	1 957	1 645	578	1 092	240	221	65	176	130	436	202	604	228

Nominal Mass, G kg	A15 (0·42A)	A16 (1·06A)	A17 (0·39A)	A18 (0·56A)	A19 (0·38A)	A20 (0·41A)	A21 (0·46A)	A22 (0·7A)	A23 (0·329A)	A24 (0·29A)	A25 (0·26A)	A26 (0·87A)	A27 (0·4A)	A28 (0·32A)	A29 (0·335A)	A30 (1·37A)	A31 (0·75A)
60	43	109	40	58	39	42	47	72	34	30	27	90	41	33	35	141	77
80	48	121	44	64	43	47	52	80	38	33	30	99	46	36	38	156	86
100	51	129	48	68	46	50	56	85	40	35	32	106	49	39	41	167	92
120	55	138	51	73	49	53	60	91	43	38	34	113	52	42	44	178	98
140	58	145	53	77	52	56	63	96	45	40	36	119	55	44	46	188	103
165	60	153	56	81	55	59	66	101	47	42	37	125	58	46	48	197	108
180	63	158	58	83	57	61	69	104	49	43	39	130	60	48	50	204	112
190	64	161	59	85	58	62	70	106	50	44	40	132	61	49	51	208	114
240	69	174	64	92	62	67	75	115	54	48	43	143	66	52	55	225	123
300	74	187	69	99	67	72	81	123	58	51	46	153	70	56	59	241	132
360	79	199	73	105	71	77	86	132	62	55	49	164	75	60	63	258	141
420	83	210	77	111	75	81	91	139	65	57	51	172	79	63	66	271	148
480	87	218	80	115	78	84	95	144	68	60	54	179	82	66	69	282	154
570	92	232	85	123	83	90	101	153	72	64	57	191	88	70	73	300	164
660	97	244	90	129	87	94	106	161	76	67	60	200	92	74	77	315	172
780	102	258	95	136	92	100	112	170	80	70	63	211	97	78	81	333	182
900	107	269	99	142	97	104	117	178	84	74	66	221	102	81	85	348	190
1 020	112	282	104	149	101	109	122	186	88	77	69	231	106	85	89	364	200
1 140	116	293	108	155	105	113	127	193	91	80	72	240	110	88	92	378	207
1 290	121	304	112	161	109	118	132	201	94	83	75	250	115	92	96	393	215
1 440	125	316	116	167	113	122	137	209	98	86	77	259	119	95	100	408	224
1 590	129	326	120	172	117	126	142	216	101	89	80	268	123	99	103	422	231
1 740	133	336	124	178	120	130	146	222	104	92	82	276	127	101	106	434	238
1 920	138	348	128	184	125	134	151	230	108	95	85	285	131	105	110	449	246
2 100	142	358	132	189	128	139	155	237	111	98	88	294	135	108	113	463	254
2 280	146	368	135	194	132	142	160	243	114	101	90	302	139	111	116	475	260
2 460	150	377	139	199	135	146	164	249	117	103	93	310	142	114	119	488	267
2 640	153	386	142	204	138	149	167	255	120	106	95	317	146	116	122	499	273
2 850	157	396	146	209	142	153	172	262	123	108	97	325	150	120	125	512	280
3 060	161	406	149	214	146	157	176	268	126	111	100	333	153	123	128	525	287
3 300	165	417	153	220	149	161	181	275	129	114	102	342	157	126	132	538	295
3 540	169	426	157	225	153	165	185	281	132	117	105	350	161	129	135	551	302
3 780	173	436	160	230	156	169	189	288	135	119	107	358	164	132	138	563	308
4 050	176	445	164	235	160	172	193	294	138	122	109	365	168	134	141	575	315
4 320	181	456	168	241	163	176	198	301	141	125	112	374	172	138	144	589	322
4 590	184	464	171	245	166	180	201	307	144	127	114	381	175	140	147	600	328
4 890	188	475	175	251	170	184	206	314	147	130	116	390	179	143	150	614	336
5 250	192	485	179	256	174	188	211	321	151	133	119	398	183	147	153	627	344
5 610	197	497	183	263	178	192	216	328	154	136	122	408	188	150	157	643	352
6 000	201	508	187	268	182	196	220	335	158	139	125	417	192	153	160	656	359
6 450	206	520	191	275	187	201	226	344	162	142	128	427	196	157	164	673	368
6 900	211	532	196	281	191	206	231	351	165	146	131	437	201	161	168	688	376
7 350	215	544	200	287	195	210	236	359	169	149	133	446	205	164	172	703	385
7 800	220	554	204	293	199	214	241	366	172	152	136	455	209	167	175	717	392
8 300	224	566	208	299	203	219	246	374	176	155	139	465	214	171	179	732	400
8 800	229	578	213	305	207	223	251	382	179	158	142	474	218	174	183	747	409
9 300	234	589	217	311	211	228	256	389	183	161	145	484	222	178	186	762	417
9 900	238	600	221	317	215	232	260	396	186	164	147	492	226	181	190	775	424
10 500	243	613	225	324	220	237	266	405	190	168	150	503	231	185	194	792	434
11 100	247	623	229	329	223	241	270	412	193	171	153	512	235	188	197	806	441
11 700	252	635	234	335	228	246	276	419	197	174	156	521	240	192	201	821	449
12 300	257	648	238	342	232	251	281	428	201	177	159	532	244	196	205	837	458
12 900	260	655	241	346	235	253	284	433	203	179	161	538	247	198	207	847	464
13 500	264	666	245	352	239	257	289	440	207	182	163	546	251	201	210	860	471
14 250	268	677	249	358	243	262	294	447	210	185	166	556	256	204	214	875	479
15 000	273	689	254	364	247	266	299	455	214	188	169	566	260	208	218	890	488

Nominal Mass, G kg	A32 (1·44A)	A33 (0·62A)	A34 (2·28A)	A35 (0·48A)	A36 (0·14A)	A37 (0·71A)	A38 (0·44A)	A39 (1·63A)	A40 (0·58A)	A41 (0·51A)	A42 (1·3A)	A43 (2·51A)	A44 (0·24A)	A45 (0·449A)	A46 (0·45A)	A47 (1·39A)	A48 (0·435A)
60	148	64	235	49	14	73	45	168	60	53	134	259	25	46	46	143	45
80	164	71	260	55	16	81	50	186	66	58	148	286	27	51	51	158	50
100	176	76	278	59	17	87	54	199	71	62	159	306	29	55	55	170	53
120	187	81	296	62	18	92	57	212	75	66	169	326	31	58	58	181	57
140	197	85	312	66	19	97	60	223	79	70	178	344	33	62	62	190	60
165	207	89	328	69	20	102	63	235	84	73	187	361	35	65	65	200	63
180	215	92	340	72	21	106	66	243	86	76	194	374	36	67	67	207	65
190	219	94	347	73	21	108	67	248	88	78	198	382	36	68	68	211	66
240	236	102	374	79	23	116	72	267	95	84	213	412	39	74	74	228	71
300	253	109	401	84	25	125	77	287	102	90	229	442	42	79	79	245	77
360	271	117	429	90	26	133	83	306	109	96	244	472	45	84	85	261	82
420	285	123	451	95	28	141	87	323	115	101	257	497	48	89	89	275	86
480	297	128	470	99	29	146	91	336	119	105	268	517	49	92	93	286	90
570	315	136	499	105	31	155	96	357	127	112	285	550	53	98	99	304	95
660	331	143	524	110	32	163	101	375	133	117	299	577	55	103	104	320	100
780	350	151	554	117	34	173	107	396	141	124	316	610	58	109	109	338	106
900	366	157	579	122	36	180	112	414	147	130	330	638	61	114	114	353	110
1 020	383	165	606	128	37	189	117	434	154	136	346	668	64	119	120	370	116
1 140	397	171	629	132	39	196	121	450	160	141	359	693	66	124	124	384	120
1 290	413	178	654	138	40	204	126	468	166	146	373	720	69	129	129	399	125
1 440	429	185	679	143	42	212	131	486	173	152	387	748	72	134	134	414	130
1 590	444	191	702	148	43	219	136	502	179	157	400	773	74	138	139	428	134
1 740	456	197	723	152	44	225	139	517	184	162	412	796	76	142	143	441	138
1 920	472	203	748	157	46	233	144	535	190	167	426	823	79	147	148	456	143
2 100	487	210	771	162	47	240	149	551	196	172	439	848	81	152	152	470	147
2 280	500	215	791	167	49	246	153	566	201	177	451	871	83	156	156	482	151
2 460	513	221	812	171	50	253	157	580	206	182	463	894	85	160	160	495	155
2 640	524	226	830	175	51	258	160	593	211	186	473	914	87	163	164	506	158
2 850	539	232	853	180	52	266	165	610	217	191	486	939	90	168	168	520	163
3 060	552	237	873	184	54	272	169	624	222	195	498	961	92	172	172	532	167
3 300	566	244	896	189	55	279	173	641	228	200	511	986	94	176	177	546	171
3 540	579	249	917	193	56	285	177	655	233	205	523	1 009	96	180	181	559	175
3 780	592	255	937	197	58	292	181	670	238	210	534	1 032	99	185	185	571	179
4 050	605	260	958	202	59	298	185	685	244	214	546	1 054	101	189	189	584	183
4 320	619	267	980	206	60	305	189	701	249	219	559	1 079	103	193	194	598	187
4 590	631	272	999	210	61	311	193	714	254	223	569	1 099	105	197	197	609	191
4 890	645	278	1 021	215	63	318	197	730	260	228	582	1 124	108	201	202	623	195
5 250	660	284	1 044	220	64	325	202	747	266	234	595	1 150	110	206	206	637	199
5 610	675	291	1 069	225	66	333	206	764	272	239	610	1 177	113	211	211	652	204
6 000	690	297	1 092	230	67	340	211	781	278	244	623	1 202	115	215	216	666	208
6 450	707	304	1 119	236	69	349	216	800	285	250	638	1 232	118	220	221	682	214
6 900	723	311	1 145	241	70	356	221	818	291	256	653	1 260	120	225	226	698	218
7 350	739	318	1 170	246	72	364	226	836	298	262	667	1 288	123	230	231	713	223
7 800	753	324	1 192	251	73	371	230	852	303	267	680	1 313	126	235	235	727	228
8 300	769	331	1 218	256	75	379	235	870	310	272	694	1 340	128	240	240	742	232
8 800	785	338	1 243	262	76	387	240	888	316	278	708	1 368	131	245	245	758	237
9 300	801	345	1 268	267	78	395	245	906	322	284	723	1 396	133	250	250	773	242
9 900	815	351	1 290	272	79	402	249	923	328	289	736	1 421	136	254	255	787	246
10 500	832	358	1 318	277	81	410	254	942	335	295	751	1 451	139	260	260	803	251
11 100	847	365	1 341	282	82	417	259	958	341	300	764	1 476	141	264	265	817	256
11 700	863	371	1 366	288	84	425	264	976	347	305	779	1 503	144	269	270	833	261
12 300	880	379	1 393	293	86	434	269	996	354	312	794	1 534	147	274	275	849	266
12 900	890	383	1 409	297	87	439	272	1 007	358	315	803	1 551	148	277	278	859	269
13 500	904	389	1 432	301	88	446	276	1 024	364	320	816	1 576	151	282	283	873	273
14 250	920	396	1 457	307	89	454	281	1 042	371	326	831	1 604	153	287	288	888	278
15 000	936	403	1 482	312	91	462	288	1 060	377	332	845	1 632	156	292	292	904	283

TABLE 2 MASS AND DIMENSIONS OF SHANK ANCHOR, SHACKLE AND SHACKLE PIN

(*Clause* 3.2.2 and *Fig.* 2)

All dimensions in millimetres.

Nominal Mass G kg	Shank kg	Mass of Shackle	Base $S=26{\cdot}374\sqrt[3]{G}$	$S1$ $(5{\cdot}62S)$	$S2$ $(0{\cdot}37S)$	$S3$ $(0{\cdot}42S)$	$S4$ $(0{\cdot}7S)$	$S5$ $(0{\cdot}36S)$	$S6$ $(0{\cdot}46S)$	$S7$ $(0{\cdot}27S)$	$S8$ $(0{\cdot}44S)$	$S9$ $(0{\cdot}212S)$	$S10$ $(0{\cdot}18S)$	$S11$ $(0{\cdot}55S)$	$S12$ $(0{\cdot}38S)$	$S13$ $(0{\cdot}21S)$	$S14$ $(0{\cdot}1S)$	$S15$ $(0{\cdot}33S)$
60	13	1	103	579	38	43	72	37	47	28	45	22	19	57	39	22	10	34
80	17	2	114	641	42	48	80	41	52	31	50	24	21	63	43	24	11	38
100	21	2	122	686	45	51	85	44	56	33	54	26	22	67	46	26	12	40
120	26	3	130	731	48	55	91	47	60	35	57	28	23	72	49	27	13	43
140	30	3	137	770	51	58	96	49	63	37	60	29	25	75	52	29	14	45
165	35	4	144	809	53	60	101	52	66	39	63	31	26	79	55	30	14	48
180	38	4	149	837	55	63	104	54	69	40	66	32	27	82	57	31	15	49
190	40	4	152	854	56	64	106	55	70	41	67	32	27	84	58	32	15	50
240	48	6	164	922	61	69	115	59	75	44	72	35	30	90	62	34	16	54
300	64	7	176	989	65	74	123	63	81	48	77	37	32	97	67	37	18	58
360	77	8	188	1 057	70	79	132	68	86	51	83	40	34	103	71	39	19	62
420	90	10	198	1 113	73	83	139	71	91	53	87	42	36	109	75	42	20	65
480	102	11	206	1 158	76	87	144	74	95	56	91	44	37	113	78	43	21	68
570	121	13	219	1 231	81	92	153	79	101	59	96	46	39	120	83	46	22	72
660	141	15	230	1 293	85	97	161	83	106	62	101	49	41	126	87	48	23	76
780	166	18	243	1 366	90	102	170	87	112	66	107	52	44	134	92	51	24	80
900	192	21	254	1 427	94	107	178	91	117	69	112	54	46	140	97	53	25	84
1 020	217	24	266	1 495	98	112	186	96	122	72	117	56	48	146	101	56	27	88
1 140	243	26	276	1 551	102	116	193	99	127	75	121	59	50	152	105	58	28	91
1 290	275	30	287	1 613	106	121	201	103	132	77	126	61	52	158	109	60	29	95
1 440	307	33	298	1 675	110	125	209	107	137	80	131	63	54	164	113	63	30	98
1 590	339	37	308	1 731	114	129	216	111	142	83	136	65	55	169	117	65	31	102
1 740	371	40	317	1 782	117	133	222	114	146	86	139	67	57	174	120	67	32	105
1 920	409	45	328	1 843	121	138	230	118	151	89	144	70	59	180	125	69	33	108
2 100	447	49	338	1 900	125	142	237	122	155	91	149	72	61	186	128	71	34	112
2 280	486	53	347	1 950	128	146	243	125	160	94	153	74	62	191	132	73	35	115
2 460	524	57	356	2 001	132	150	249	128	164	96	157	75	64	196	135	75	36	117
2 640	562	61	364	2 046	135	153	255	131	167	98	160	77	66	200	138	76	36	120
2 850	607	66	374	2 102	138	157	262	135	172	101	165	79	67	206	142	79	37	123
3 060	652	71	383	2 152	142	161	268	138	176	103	169	81	69	211	146	80	38	126
3 300	703	77	393	2 209	145	165	275	141	181	106	173	83	71	216	149	83	39	130
3 540	754	82	402	2 259	149	169	281	145	185	109	177	85	72	221	153	84	40	133
3 780	805	88	411	2 310	152	173	288	148	189	111	181	87	74	226	156	86	41	136
4 050	863	94	420	2 360	155	176	294	151	193	113	185	89	76	231	160	88	42	139
4 320	920	100	430	2 417	159	181	301	155	198	116	189	91	77	236	163	90	43	142
4 590	978	106	438	2 462	162	184	307	158	201	118	193	93	79	241	166	92	44	145
4 890	1 042	114	448	2 518	166	188	314	161	206	121	197	95	81	246	170	94	45	148
5 250	1 118	122	458	2 574	169	192	321	165	211	124	202	97	82	252	174	96	46	151
5 610	1 195	130	469	2 636	174	197	328	169	216	127	206	99	84	258	178	98	47	155
6 000	1 278	139	479	2 692	177	201	335	172	220	129	211	102	86	263	182	101	48	158
6 450	1 374	150	491	2 759	182	206	344	177	226	133	216	104	88	270	187	103	49	162
6 900	1 470	160	502	2 821	186	211	351	181	231	136	221	106	90	276	191	105	50	166
7 350	1 566	170	513	2 883	190	215	359	185	236	139	226	109	92	282	195	108	51	169
7 800	1 661	181	523	2 939	194	220	366	188	241	141	230	111	94	288	199	110	52	173
8 300	1 768	193	534	3 001	198	224	374	192	246	144	235	113	96	294	203	112	53	176
8 800	1 874	204	545	3 063	202	229	382	196	251	147	240	116	98	300	207	114	54	180
9 350	1 992	217	556	3 125	206	234	389	200	256	150	245	118	100	306	211	117	56	183
9 900	2 109	230	566	3 181	209	238	396	204	260	153	249	120	102	311	215	119	57	187
10 500	2 236	244	578	3 248	214	243	405	208	266	156	254	123	104	318	220	121	58	191
11 100	2 364	258	588	3 305	218	247	412	212	270	159	259	125	106	323	223	123	59	194
11 700	2 492	271	599	3 366	222	252	419	216	276	162	264	127	108	329	228	126	60	198
12 300	2 620	285	611	3 434	226	257	428	220	281	165	269	130	110	336	232	128	61	202
12 900	2 748	299	618	3 473	229	260	433	222	284	167	272	131	111	340	235	130	62	204
13 500	2 876	313	628	3 529	232	264	440	226	289	170	276	133	113	345	239	132	63	207
14 250	3 035	330	639	3 591	236	268	447	230	294	173	281	135	115	351	243	134	64	211

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	*Unit*	*Symbol*
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	*Unit*	*Symbol*
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	*Unit*	*Symbol*	*Conversion*
Force	newton	N	1 N = 1 kg. 1 m/s^2
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Pressure stress	pascal	Pa	1 Pa = 1 N/m^2

INDIAN STANDARDS INSTITUTION

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002

Telephone : 27 01 31 (20 lines) **Telegrams : Manaksanstha**

Regional Offices:

		Telephone
Western : Novelty Chambers, Grant Road	BOMBAY 400007	37 97 29
Eastern : 5 Chowringhee Approach	CALCUTTA 700072	23 08 02
Southern : C.I.T. Campus, Adyar	MADRAS 600020	41 24 42
Northern: B69, Phase VII	S.A.S. NAGAR (MOHALI) 160051	—

Branch Offices:

'Pushpak', Nurmohamed Shaikh Marg, Khanpur	AHMADABAD 380001	2 03 91
'F' Block, Unity Bldg, Narasimharaja Square	BANGALORE 560002	2 76 49
5-8-56/57 L. N. Gupta Marg	HYDERABAD 500001	4 57 11
117/418B Sarvodaya Nagar	KANPUR 208005	82 72
B.C.I. Bldg (3rd Floor), Gandhi Maidan East	PATNA 800004	5 36 55
Hantex Bldg (2nd Floor), Rly Station Road	TRIVANDRUM 695001	32 27

Printed at Sree Saraswaty Press Ltd. (Under West Bengal Govt.'s Management), Calcutta, India